

REMARKS

Claims 1-47 are pending in the instant application. Claims 1, 4, 6, 9 – 11, 15, 16, 24, 37, 38 and 47 have been amended, Claims 7, 8, 12-14, 25-36 and 46 have been cancelled and new Claim 48 is submitted for consideration by the Examiner. Support for new Claim 48 can be found, for example, on instant Table 2. Applicants respectfully request reconsideration and allowance of this application.

The rejections of Claims 1-7, 12-14 and 25-32 under 35 U.S.C. 102(b) as anticipated by, or in the alternative, under 35 U.S.C. 103(a) as obvious over the Sudan article, are respectfully traversed. Applicants respectfully submit that the Sudan article is not available as prior art under 35 U.S.C. 102(b) since the article did not published more than one year prior to the filing date of the instant application (i.e., the instant application was filed on December 01, 2003 and the Sudan article merely references a publication in 2003). Applicants reserve the right to challenge the Sudan article as being prior art under 102 or 103.

The Sudan article fails to disclose the claimed heat of adsorption. That is, the heat of adsorption disclosed by Sudan is less than the claimed amount (e.g., Sudan discloses 19.2 kJ/mol which is less than 5kcal/mole). Sudan lacks any disclosure or other basis for: 1) increasing the heat of adsorption, or 2) reducing the diameter the SWNT in order to increase the heat of adsorption.

Moreover, as recognized by the Office Action the Sudan article does not disclose SWNT bundles. Therefore, the Sudan article fails to disclose each and every aspect of the invention and cannot anticipate the claimed invention. The disclosure of the Sudan article also fails to teach or suggest usage of such bundles and, therefore, the Sudan article cannot establish a prima facie case of obviousness.

The rejection of Claims 1, 8-11, 15-24, 25 and 33-47 under 35 U.S.C. 103(a) as being unpatentable over the Sudan article in view of Rodriguez (U.S.P.N. 6,159,538), is respectfully traversed.

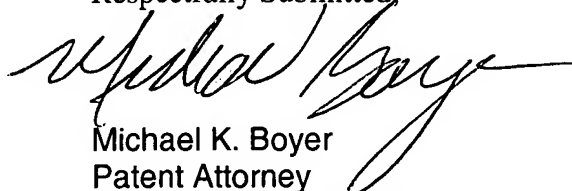
The Sudan article contains the aforementioned deficiencies. In addition Sudan teaches using 0.7 through 1.2nm nanotubes. Such teaches away from the claimed invention which

uses smaller tubes in order to increase hydrogen storage. Sudan does not disclose, teach or suggest using tubes as small as 0.4nm, or that such tubes are advantageous (e.g., Sudan does not disclose that decreasing diameter results in an increased heat of adsorption). The Sudan article's disclosure of 1.2nm nanotubes precludes and teaches away from a material wherein 75 percent of the diameters of the single wall carbon nanotubes range from 0.4 to 0.8 nanometers.

These deficiencies of the Sudan article are not remedied by USPN '538. USPN '538 teaches that adding metal is desirable in order to intercalate the nanostructure. In contrast, the Sudan article discloses that the presence of metal such as Co:Ni does not affect the nanostructure or improve hydrogen storage (e.g., refer to Fig 5 of Sudan). The distinct affect of metal in the systems of Sudan and USPN '538 illustrates that these documents employ distinct hydrogen storage materials and, therefore, the teachings of USPN '538 are not applicable or combinable with the Sudan article. Accordingly, Applicants respectfully submit that a skilled person in this art would lack the requisite motivation to combine these references, and these references cannot render the claimed invention obvious.

Applicants believe that the pending claims define patentable subject matter and request issuance of a Notice of Allowance. Please find attached hereto a Petition for a Three Month Extension of Time. Should there be any other fee due in connection with this Application, please charge the same to Deposit Account No. 01-0493 (Air Products). Should the Examiner deem that any action on the part of Applicants would advance prosecution, the Examiner is invited to telephone Applicants' attorney.

Respectfully Submitted,



Michael K. Boyer
Patent Attorney
Registration No. 33,085
7201 Hamilton Boulevard
Allentown, PA 18195-1501
(610) 481-3479

Encl.: Three Month Extension of Time